



UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE
United States Patent and Trademark Office
Address: COMMISSIONER FOR PATENTS
P.O. Box 1450
Alexandria, Virginia 22313-1450
www.uspto.gov

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/514,428	11/15/2004	Peter Van Hasselt	1454-1580	6193

21171 7590 02/27/2007
STAAS & HALSEY LLP
SUITE 700
1201 NEW YORK AVENUE, N.W.
WASHINGTON, DC 20005

EXAMINER

DOERRLER, WILLIAM CHARLES

ART UNIT	PAPER NUMBER
----------	--------------

3744

SHORTENED STATUTORY PERIOD OF RESPONSE	MAIL DATE	DELIVERY MODE
3 MONTHS	02/27/2007	PAPER

Please find below and/or attached an Office communication concerning this application or proceeding.

If NO period for reply is specified above, the maximum statutory period will apply and will expire 6 MONTHS from the mailing date of this communication.

Office Action Summary

Application No.

10/514,428

Applicant(s)

VAN HASSELT, PETER

Examiner

William C. Doerrler

Art Unit

3744

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 29 January 2007.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 11-21 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 11 and 15-21 is/are rejected.
- 7) ☒ Claim(s) 12-14 is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 29 January 2007 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some * c) ☐ None of:
1. ☒ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- 1) ☐ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☐ Information Disclosure Statement(s) (PTO/SB/08)
Paper No(s)/Mail Date _____.
- 4) ☐ Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____.
- 5) ☐ Notice of Informal Patent Application
- 6) ☐ Other: _____.

DETAILED ACTION

Priority

Receipt is acknowledged of papers submitted under 35 U.S.C. 119(a)-(d), which papers have been placed of record in the file.

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

Claims 11,15,16,18 and 19 are rejected under 35 U.S.C. 103(a) as being unpatentable over Steinmeyer et al '059.

Steinmeyer et al '059 discloses a magnet with a superconducting winding 10 which is not in direct physical contact with a refrigerant, a cold head 16 of a refrigeration system 15 and a line system 37,39 for circulating refrigerant using a thermosiphon effect. Figure 5 shows part of the pipeline close to vertical (more than 1 degree from horizontal). Steinmeyer '059 is disclosed as a cooling system for a rotating winding. It is considered obvious to one of ordinary skill in the art that a device usable for rotating windings could be used for stationary windings. Cooling a stationary winding is less complex than cooling a rotating winding, but one of ordinary skill in the art would nonetheless recognize that a system for a rotating winding could be used to cool a

stationary winding to provide a stable thermal atmosphere for the superconductor, so it continues to function properly.

Claims 11, 15, 16, 18 and 19 are rejected under 35 U.S.C. 103(a) as being unpatentable over Steinmeyer et al '541.

Steinmeyer et al '541 discloses a magnet with a superconducting winding 10 which is not in direct physical contact with a refrigerant, a cold head 18 of a refrigeration system 16 and a line system 20 for circulating refrigerant using a thermosiphon effect. Figures 1 and 2 show part of the pipeline close to vertical (more than 1 degree from horizontal). Steinmeyer '541 is disclosed as a cooling system for a rotating winding. It is considered obvious to one of ordinary skill in the art that a device usable for rotating windings could be used for stationary windings. Cooling a stationary winding is less complex than cooling a rotating winding, but one of ordinary skill in the art would nonetheless recognize that a system for a rotating winding could be used to cool a stationary winding to provide a stable thermal atmosphere for the superconductor, so it continues to function properly.

Claims 11 and 15-19 are rejected under 35 U.S.C. 103(a) as being unpatentable over Gamble et al '601.

Figures 11-13 show a thermosiphon which is cooled by a cold head of a cooler and is used to cool a superconductor winding. The refrigerant from the thermosiphon cools the winding mount, so it does not contact the winding. In regard to claims 15 and 16, part of the thermosiphon is nearly vertical, so it has an inclination of more than 1 degree from horizontal. In regard to claim 17, the dimensions are given in column 5

lines 17-26. Gamble et al '601 is disclosed as a cooling system for a rotating winding. It is considered obvious to one of ordinary skill in the art that a device usable for rotating windings could be used for stationary windings. Cooling a stationary winding is less complex than cooling a rotating winding, but one of ordinary skill in the art would nonetheless recognize that a system for a rotating winding could be used to cool a stationary winding to provide a stable thermal atmosphere for the superconductor, so it continues to function properly.

Claims 11 and 15-19 are rejected under 35 U.S.C. 103(a) as being unpatentable over Gamble et al '943.

Figures 11-13 show a thermosiphon which is cooled by a cold head of a cooler and is used to cool a superconductor winding. The refrigerant from the thermosiphon cools the winding mount, so it does not contact the winding. In regard to claims 15 and 16, part of the thermosiphon is nearly vertical, so it has an inclination of more than 1 degree from horizontal. In regard to claim 17, the dimensions are given in column 4 line 59 to the end of the column. Gamble et al '943 is disclosed as a cooling system for a rotating winding. It is considered obvious to one of ordinary skill in the art that a device usable for rotating windings could be used for stationary windings. Cooling a stationary winding is less complex than cooling a rotating winding, but one of ordinary skill in the art would nonetheless recognize that a system for a rotating winding could be used to cool a stationary winding to provide a stable thermal atmosphere for the superconductor, so it continues to function properly.

Claims 17,20 and 21 are rejected under 35 U.S.C. 103(a) as being unpatentable over either Steinmeyer et al reference in view of either Rojey or Laverman et al. Each Steinmeyer et al reference, discloses applicant's basic inventive concept, a cooling system for a superconductive winding which uses a thermosyphon to cool the winding mount, substantially as claimed with the exception of using two refrigerants with different condensation temperatures in the cooling system. Rojey and Laverman et al each show this feature to be old in the thermosyphon art. It would have been obvious to one of ordinary skill in the art at the time of applicant's invention from the teaching of either Rojey or Laverman et al to modify the thermosyphonic cooling system of either Steinmeyer et al reference by using two refrigerants with different condensation points to enable cooling over a wider range and to permit the one refrigerant to "precool" the other. In regard to claim 17, the Steinmeyer et al references do not give dimensions, but less than 10 square centimeters is seen well within the scope of typical thermosyphons and as such is seen as a matter of design choice for an ordinary practitioner in the art. In regard to claim 21, Official Notice is taken that cooled superconductor windings are required for MRI machines. Using the cooling system of Steinmeyer for an MRI system, as it is disclosed for use with superconductor windings, would have been obvious to an ordinary practitioner in the art.

Claims 20 and 21 are rejected under 35 U.S.C. 103(a) as being unpatentable over either Gamble et al reference in view of either Rojey or Laverman et al.

Art Unit: 3744

Each Gamble et al reference, discloses applicant's basic inventive concept, a cooling system for a superconductive winding which uses a thermosyphon to cool the winding mount, substantially as claimed with the exception of using two refrigerants with different condensation temperatures in the cooling system. Rojey and Laverman et al each show this feature to be old in the thermosyphon art. It would have been obvious to one of ordinary skill in the art at the time of applicant's invention from the teaching of either Rojey or Laverman et al to modify the thermosyphonic cooling system of either Gamble et al reference by using two refrigerants with different condensation points to enable cooling over a wider range and to permit the one refrigerant to "precool" the other. In regard to claim 17, the Gamble et al references do not give dimensions, but less than 10 square centimeters is seen well within the scope of typical thermosyphons and as such is seen as a matter of design choice for an ordinary practitioner in the art. In regard to claim 21, Official Notice is taken that cooled superconductor windings are required for MRI machines. Using the cooling system of Gamble for an MRI system, as it is disclosed for use with superconductor windings, would have been obvious to an ordinary practitioner in the art.

Allowable Subject Matter

Claims 12-14 are objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

Response to Arguments

Applicant's arguments with respect to claims 11 and 15-21 have been considered but are moot in view of the new ground(s) of rejection. It is agreed that the base references do not specifically disclose the cooling of stationary superconductive windings. However, due to the fact that cooling stationary windings is less complex than cooling rotating windings, it is considered obvious for an ordinary practitioner in the art to realize that a cooling system for a rotating winding could be used for a stationary winding, without the need for the rotating seals. As none of the references require rotation to produce the cooling, they will function just as well if the coil is stationary.

Conclusion

Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

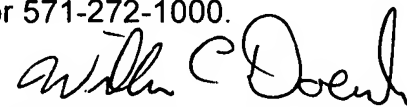
A shortened statutory period for reply to this final action is set to expire **THREE MONTHS** from the mailing date of this action. In the event a first reply is filed within **TWO MONTHS** of the mailing date of this final action and the advisory action is not mailed until after the end of the **THREE-MONTH** shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of

the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to William C. Doerrler whose telephone number is (571) 272-4807. The examiner can normally be reached on Monday-Friday 6:30-4:30.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Cheryl Tyler can be reached on (571) 272-4834. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.


William C Doerrler
Primary Examiner
Art Unit 3744

WCD